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THE DOW CHEMICAL COMPANY INTELLECTUAL PROPERTY SECTION P. O. BOX 1967 MIDLAND, MI 48641-1967			PIAZZA CORCORAN, GLADYS JOSEFINA	
			ART UNIT	PAPER NUMBER
			1733	

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/935,900

Applicant(s)

KORCHNAK ET AL.

Examiner

Gladys JP Corcoran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25, 27-36 and 46-59 is/are pending in the application.
- 4a) Of the above claim(s) 1-24 and 55-59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25, 27-36 and 46-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-25, 27-36, 46-54, drawn to a method of repairing fuel tanks, classified in class 156, subclass 94.
  - II. Claims 55-59, drawn to a fuel tank, classified in class 220, subclass 4.14.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process (as compared to claims 25, 27-36, 46-54) such as without a coating step (the tank or patch can be preformed with adhesive or the adhesive can be injected between the tank and patch) or without a pressing step. As compared to claims 1-24, the process as claimed can be used to make other and materially different product such as a tank without a patch.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. Newly submitted claims 55-59 are directed to an invention that is independent or distinct from the invention originally claimed as discussed above.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 55-59 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

6. Claims 1-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species I, there being no allowable generic or linking claim. Election was made **without** traverse in the Paper filed October 24, 2003.

#### ***Specification***

7. The disclosure is objected to because of the following informalities: The status of the US Application 09/466,321 cited on page 5, last paragraph should be updated to include, --now US Patent No. 6,806,330--.

Appropriate correction is required.

***Claim Objections***

8. Claim 46 objected to because of the following informalities: Claim 46, line 13 recites "obnd" which should be --bond--. Appropriate correction is required.

9. Claim 52 objected to because of the following informalities: Claim 52, line 5 recites "leak(s)" which should be --leaks--. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 46, 47, 48, 51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 46 recites, "A method for repairing fuel tanks consisting essentially of".

The Specification clearly discloses additional step in the method of repair not included in claim 46 (such as pretreatment, page 11, and the use of mechanical fasteners page 12) without an indication that the steps in claim 46 are the only required steps.

Consequently, there is no support in the original Specification that conveys to one of ordinary skill in the art at the time of the invention that the inventors had possession of performing the method which is "consisting essentially of" the steps recited in claim 46.

Claim 46 recites "a fuel permeation rate of not more than about 46". While there is support for "a fuel permeation rate of not more than 46", there is no indication in the original Specification to reasonably convey to one of ordinary skill in the art that the inventors had possession of an approximation of the fuel permeation rate.

Claim 47 recites "a fuel permeation rate of not more than about 12". While there is support for "a fuel permeation rate of not more than 12", there is no indication in the original Specification to reasonably convey to one of ordinary skill in the art that the inventors had possession of an approximation of the fuel permeation rate.

Claim 51 recites "does not include the use of a mechanical attachment". The Specification clearly discloses that mechanical fasteners may be used in the method of repair (page 12, Figure 2C). Consequently, there is no support in the original Specification that conveys to one of ordinary skill in the art at the time of the invention that the inventors had possession of performing the method which "does not include the use of a mechanical attachment."

### ***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claim 25, 49, 50, 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leonard (US Patent No. 4,574,971) in view of Wood et al. (US Patent No. 5,928,745).

Leonard discloses a method of repairing fuel tanks (column 1, lines 1-15; column 2, lines 17-27) by providing a tank with a surface with a detected leak (column 2, lines 57-59), providing a patch or plug (retainer plate) having a surface to be attached to the tank surface, coating the tank surface and/or the patch or plug surface with an adhesive (column 3, lines 4-10), placing the patch or plug over the detected leak such that the adhesive is sandwiched between the patch or plug surface and the tank surface (column 3, lines 5-10), pressing the patch or plug surface against the tank and allowing the adhesive to cure to bond the patch or plug surface and the tank surface (column 3, lines 6-39).

As to the limitation that the patch or plug comprises a multiplayer laminate structure having one or more layers of a low energy surface material and one or more layers of a polymer having a fuel barrier property, Leonard discloses the patch may be made of any suitable plastic material with sufficient structural integrity (column 6, lines 35-59), however does not specifically disclose a multilayer plastic laminate as claimed.

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It is generally well known in the repair art to provide a repair patch of similar materials as known materials for forming the structure itself.<sup>1</sup> It is also well known in the fuel tank art to form a fuel tank wall of a plastic material where the plastic is a multi-layer laminate of a low energy surface material and a polymer having a fuel barrier property. For example, Wood discloses it is known to form walls of fuel tanks from multi-layered plastic material (column 3, lines 43-51) with a layer of low energy surface material (structural layer, column 7, lines 53-55, column 5, lines 13-39) and a layer of a polymer having a fuel barrier property (barrier layer, column 4, line 21 to column 7, line 44). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of repairing a fuel tank with a plastic patch as shown by Leonard with known materials for forming fuel tanks to form the plastic patch as it is well known in the repair art to form patches of known materials for the structure to be repaired and as the particular layers are known for forming fuel tank walls as shown by Wood, only the expected results would be attained.

As to the newly added limitation that the adhesive can support a load of 1334 N, Leonard does not specifically disclose the load capabilities of the adhesive used to bond the patch. However, one of ordinary skill in the art at the time of the invention would readily appreciate selecting appropriate adhesives for the particular repair taking into consideration the load requirements of the particular product. In particular, one of ordinary skill in the art would readily appreciate selecting an adhesive that can support a load of 1334 N for the particular repair of a fuel tank. It would have been obvious to one

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<sup>1</sup> It is noted that Applicant has not traversed the well known statement, therefore such is considered



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of ordinary skill in the art at the time of the invention to perform the method of repairing a fuel tank as shown by Leonard and Wood by selecting an adhesive that can support a load of 1334 N as would have been well within the purview of one of ordinary skill in the art, only the expected results would be attained.

As to claim 52, all the limitations of the claim have been met by the references as discussed above for claim 25.

As to claims 49, 50, 53, and 54 which recite that the adhesive exhibits a fuel vapor permeation rate of not more than 46 or 12 (respectively) g-mm/m<sup>2</sup>/day according to ASTM E96-94, Leonard does not specifically disclose the fuel vapor permeation rate of the adhesive used to bond the patch. However, one of ordinary skill in the art at the time of the invention would readily appreciate selecting appropriate adhesives for the particular repair taking into consideration the fuel vapor permeation rate requirements of the particular product. In particular, one of ordinary skill in the art would readily appreciate selecting an adhesive that exhibits a fuel vapor permeation rate of not more than 46 or 12 (respectively) g-mm/m<sup>2</sup>/day according to ASTM E96-94 for the particular repair of a fuel tank; such fuel permeation rates are considered known and desired in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of repairing a fuel tank as shown by Leonard and Wood by selecting an adhesive that exhibits a fuel vapor permeation rate of not more than 46 or 12 (respectively) g-mm/m<sup>2</sup>/day according to ASTM E96-94 as would have been well

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within the purview of one of ordinary skill in the art, only the expected results would be attained.

15. Claims 25, 27-36, 49, 50, 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leonard in view of Wood et al. as applied to claim 25 above, and further in view of Skoultchi et al. (US Patent No. 5,106,928) and/or Zharov et al. (US Patent No. 5,539,070) and/or Pocius et al. (US Patent No. 5,616,796).

As discussed above, Leonard does not specifically disclose the load capabilities or fuel vapor permeation rate of the adhesive used to bond the patch. In addition to it being obvious for one of ordinary skill in the art to select an adhesive with the appropriate load and fuel permeation properties, the particular adhesive used by Applicant with such properties are known and obvious as discussed below.

As to claim 27, Leonard discloses using a polymer sealing material to adhere the patch to the tank that will become rapidly cured in place, with an example of the material being a two part epoxy mixture. However, it would have been well within the purview of one of ordinary skill in the art to select any known and commercially available adhesive polymer sealing material for the repair method. It is noted that Applicant Admits in the specification that these adhesives are known (pages 4-5). For example, Skoultchi discloses an adhesive comprising a polymerizable acrylic composition and an amine/organoborane complex in order to provide an adhesive with a fast, room temperature cure as an advantage over previous epoxy systems (column 1, lines 30-40). Additionally, Zharov also discloses an example of an adhesive comprising a polymerizable acrylic composition and an amine/organoborane complex for bonding

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substrates and in particular low surface energy substrate materials (similar to the materials used for the tank walls as shown above by Wood) (column 1, lines 55-61).

Finally, Pocius discloses an example of an adhesive comprising a polymerizable acrylic composition and an amine/organoborane complex for bonding substrates and in particular low surface energy substrate materials (column 1, lines 8-17; column 17, lines 47-68). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of repairing fuel tanks as shown by Leonard and Wood with the use of a well known and commercially available adhesive with an amine/organoborane complex as would have been well within the purview of one of ordinary skill in the art and as further exemplified by Skoultchi for providing a fast room temperature cure as an advantage over epoxy systems and/or as exemplified by Zharov and Pocius for providing improved bonding adhesives for low surface energy materials similar to those disclosed by Wood.

As to claims 28-33, the well known adhesives with an amine/organoborane complex have the particular structures as claimed, and further these are exemplified by the references Skoultchi, Zharov, Pocius.

As to claim 34, Leonard discloses tanks are typically made of steel (column 1, lines 13-15). It is considered well known in the art to form fuel tanks of the materials cited by applicant, stainless steel, pre-coated or post-coated low-carbon steel, aluminum, bronze, electroplated zinc, nickel, or galvanneal.<sup>2</sup> Furthermore, it would have been well within the purview of one of ordinary skill in the art to repair fuel tanks of

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any conventionally used materials in the same manner as described by Leonard. Only the expected results would be attained. As to claims 35 and 45, Leonard discloses tanks are typically made of a metal (steel) (column 1, lines 13-15). It is considered well known in the art to form fuel tanks of the materials cited by applicant, metal or a mono-layer or a multi-layered structure having one or more layers of polymer having a fuel barrier property and one or more layers of a low energy surface material as exemplified by Wood (column 1, lines 10-28, 54-68).<sup>3</sup> Furthermore, it would have been well within the purview and obvious to one of ordinary skill in the art at the time of the invention to repair fuel tanks of any conventionally used materials in the same manner as described by Leonard such as a mono or multi-layered structure as disclosed by Wood. Only the expected results would be attained. As to claim 36, Wood discloses the claimed materials for the low energy surface material and the fuel barrier polymer (column 1, lines 10-30; column 4, line 44 to column 5, line 39; column 7, lines 49-56).

16. Claims 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith '461 (US Patent No. 3,251,461), Smith et al. '007 (US Patent No. 5,166,007), and/or Leonard (US Patent No. 4,574,971).

It is considered well known in the art of repair to repair items with detected leaks, such as fuel tanks, by providing a patch or plug having a surface to be attached to the fuel tank, coating the tank surface and/or patch of plug surface with an adhesive, placing the patch or plug over the detected leaks such that adhesive is sandwiched

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<sup>2</sup> It is noted that Applicant has not traversed the well known statement, therefore such is considered acquiesced by Applicant to be Admitted Prior Art (see MPEP § 2144.03).

<sup>3</sup> It is noted that Applicant has not traversed the well known statement, therefore such is considered acquiesced by Applicant to be Admitted Prior Art (see MPEP § 2144.03).

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between the patch or plug surface and the tank surface, pressing the patch or plug against the tank and allowing the adhesive to cure to bond together the patch or plug surface and the tank surface. All three of the references (Smith '461, Smith '007, and/or Leonard) show these method steps.

As to the newly added limitation that the adhesive can support a load of 1334 N, the references Smith '461, Smith '007 and/or Leonard do not specifically disclose the load capabilities of the adhesive used to bond the patch. However, one of ordinary skill in the art at the time of the invention would readily appreciate selecting appropriate adhesives for the particular repair taking into consideration the load requirements of the particular product. In particular, one of ordinary skill in the art would readily appreciate selecting an adhesive that can support a load of 1334 N for the particular repair of a fuel tank. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of repairing a fuel tank as shown by Smith '461, Smith '007 and/or Leonard by selecting an adhesive that can support a load of 1334 N as would have been well within the purview of one of ordinary skill in the art, only the expected results would be attained.

As to claims 53 and 54 which recite that the adhesive exhibits a fuel vapor permeation rate of not more than 46 or 12 (respectively) g-mm/m<sup>2</sup>/day according to ASTM E96-94, the references Smith '461, Smith '007 and/or Leonard do not specifically disclose the fuel vapor permeation rate of the adhesive used to bond the patch. However, one of ordinary skill in the art at the time of the invention would readily appreciate selecting appropriate adhesives for the particular repair taking into

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consideration the fuel vapor permeation rate requirements of the particular product. In particular, one of ordinary skill in the art would readily appreciate selecting an adhesive that exhibits a fuel vapor permeation rate of not more than 46 or 12 (respectively) g-mm/m<sup>2</sup>/day according to ASTM E96-94 for the particular repair of a fuel tank; such fuel permeation rates are considered known and desired in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of repairing a fuel tank as shown by Smith '461, Smith '007 and/or Leonard by selecting an adhesive that exhibits a fuel vapor permeation rate of not more than 46 or 12 (respectively) g-mm/m<sup>2</sup>/day according to ASTM E96-94 as would have been well within the purview of one of ordinary skill in the art, only the expected results would be attained.

17. Claims 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith '461 (US Patent No. 3,251,461), Smith et al. '007 (US Patent No. 5,166,007), and/or Leonard (US Patent No. 4,574,971) as applied to claim 52 above, and further in view of Skoultchi et al. (US Patent No. 5,106,928) and/or Zharov et al. (US Patent No. 5,539,070) and/or Pocius et al. (US Patent No. 5,616,796).

As discussed above, the references Smith '461, Smith '007 and/or Leonard do not specifically disclose the load capabilities or fuel vapor permeation rate of the adhesive used to bond the patch. In addition to it being obvious for one of ordinary skill in the art to select an adhesive with the appropriate load and fuel permeation properties, the particular adhesive used by Applicant with such properties are known and obvious as discussed below.

Smith '461 and Smith '007 both disclose using a plastic sealing compound adhesive to bond the patch to the tank. Leonard discloses using a polymer sealing material to adhere the patch to the tank that will become rapidly cured in place, with an example of the material being a two part epoxy mixture. It would have been well within the purview of one of ordinary skill in the art to select any known and commercially available adhesive polymer sealing material for the repair method. It is noted that Applicant Admits in the specification that these adhesives are known (pages 4-5). For example, Skoultchi discloses an adhesive for bonding structural components of a variety of materials comprising a polymerizable acrylic composition and an amine/organoborane complex in order to provide an adhesive with a fast, room temperature cure as an advantage over previous epoxy systems (column 1, lines 30-40). Additionally, Zharov also discloses an example of an adhesive or bonding structural components of a variety of materials comprising a polymerizable acrylic composition and an amine/organoborane complex for bonding substrates and in particular low surface energy substrate materials (column 1, lines 55-61). Finally, Pocius discloses an example of an adhesive or bonding structural components of a variety of materials comprising a polymerizable acrylic composition and an amine/organoborane complex for bonding substrates and in particular low surface energy substrate materials (column 1, lines 8-17; column 17, lines 47-68). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of repairing fuel tanks as shown by Smith '461, Smith '007 and/or Leonard with the use of a well known and commercially available adhesive with an

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amine/organoborane complex with the properties of load and fuel vapor permeation as claimed as would have been well within the purview of one of ordinary skill in the art and as further exemplified by Skoultchi for providing a fast room temperature cure as an advantage over epoxy systems and/or as exemplified by Zharov and Pocius for providing improved bonding adhesives for bonding structural components made of a variety of materials.

18. Claims 46, 47, 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith '461 (US Patent No. 3,251,461), Smith et al. '007 (US Patent No. 5,166,007), and/or Leonard (US Patent No. 4,574,971) as applied to claim 52 above, and further in view of Wood (US Patent No. 5,928,745).

The limitations of claim 46 are met by the references Smith '461, Smith '007 and/or Leonard as set forth above with reference to claim 52 and 53. As to the additional limitation that the method is "consisting essentially of", the references Smith '461 and Smith '007 do not show any additionally material steps other than the ones claimed. As to Leonard, the reference discloses providing additional closing material, however it is considered well known in the art to only provide adhesive bonding as an equivalent alternative to adhesive bonding with the additional closing material as shown in Leonard. For example, Smith '007 discloses the known alternatives of repairing a tank by using only adhesive to bond the patch or alternatively also using plastic or metal fasteners (column 2, lines 34-39). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of repairing a tank as shown by



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Leonard without the additional step of providing a closing fastener as is considered a well known alternative choice in the art as exemplified by Smith '007.

As to the limitation that the patch or plug comprises a multiplayer laminate structure having one or more layers of a low energy surface material and one or more layers of a polymer having a fuel barrier property, it is considered well known in the art of repair to provide a patch of known materials for the structure to be repaired. It is noted that Smith '007 discloses a plastic patch and Leonard discloses the patch may be made of any suitable plastic material with sufficient structural integrity (column 6, lines 35-59), however neither specifically discloses a multilayer plastic laminate as claimed. It is generally well known in the repair art to provide a repair patch of similar materials as known materials for forming the structure itself.<sup>4</sup> It is also well known in the fuel tank art to form a fuel tank wall of a plastic material where the plastic is a multi-layer laminate of a low energy surface material and a polymer having a fuel barrier property. For example, Wood discloses it is known to form walls of fuel tanks from multi-layered plastic material (column 3, lines 43-51) with a layer of low energy surface material (structural layer, column 7, lines 53-55, column 5, lines 13-39) and a layer of a polymer having a fuel barrier property (barrier layer, column 4, line 21 to column 7, line 44). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of repairing a fuel tank with a plastic patch as shown by Smith '461, Smith '007 and/or Leonard with known materials for forming fuel tanks to form the plastic patch as it is well known in the repair art to form patches of known materials for

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the structure to be repaired and as the particular layers are known for forming fuel tank walls as shown by Wood, only the expected results would be attained.

19. Claims 46, 47, 48, 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith '461 (US Patent No. 3,251,461), Smith et al. '007 (US Patent No. 5,166,007), and/or Leonard (US Patent No. 4,574,971) in view of Wood (US Patent No. 5,928,745) as applied to claims 52 and 46 above, and further Skoultchi et al. (US Patent No. 5,106,928) and/or Zharov et al. (US Patent No. 5,539,070) and/or Pocius et al. (US Patent No. 5,616,796).

As discussed above, the references Smith '461, Smith '007 and/or Leonard do not specifically disclose the load capabilities or fuel vapor permeation rate of the adhesive used to bond the patch. In addition to it being obvious for one of ordinary skill in the art to select an adhesive with the appropriate load and fuel permeation properties, the particular adhesive used by Applicant with such properties are known and obvious as discussed below.

As to claim 48, Smith '461 and Smith '007 both disclose using a plastic sealing compound adhesive to bond the patch to the tank. Leonard discloses using a polymer sealing material to adhere the patch to the tank that will become rapidly cured in place, with an example of the material being a two part epoxy mixture. However, it would have been well within the purview of one of ordinary skill in the art to select any known and commercially available adhesive polymer sealing material for the repair method. It is noted that Applicant Admits in the specification that these adhesives are known (pages

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<sup>4</sup> It is noted that Applicant has not traversed the well known statement, therefore such is considered

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4-5). For example, Skoultchi discloses an adhesive comprising a polymerizable acrylic composition and an amine/organoborane complex in order to provide an adhesive with a fast, room temperature cure as an advantage over previous epoxy systems (column 1, lines 30-40). Additionally, Zharov also discloses an example of an adhesive comprising a polymerizable acrylic composition and an amine/organoborane complex for bonding substrates and in particular low surface energy substrate materials (similar to the materials used for the tank walls as shown above by Wood) (column 1, lines 55-61). Finally, Pocius discloses an example of an adhesive comprising a polymerizable acrylic composition and an amine/organoborane complex for bonding substrates and in particular low surface energy substrate materials (column 1, lines 8-17; column 17, lines 47-68). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of repairing fuel tanks as shown by Smith '461, Smith '007 and/or Leonard, and Wood with the use of a well known and commercially available adhesive with an amine/organoborane complex as would have been well within the purview of one of ordinary skill in the art and as further exemplified by Skoultchi for providing a fast room temperature cure as an advantage over epoxy systems and/or as exemplified by Zharov and Pocius for providing improved bonding adhesives for low surface energy materials similar to those disclosed by Wood.

### ***Response to Arguments***

20. Applicant has amended the claims to include new limitations, thus a new grounds for rejection have been made.

21. Applicant's arguments filed March 29, 2005 have been fully considered but they are not persuasive.

Applicant argues that none of the references cited disclose patching a fuel tank with an adhesive that can support a load of 1334N or have the fuel vapor permeation properties as claimed. As discussed above, one of ordinary skill in the art would readily recognize selecting an adhesive with the claimed properties in order to provide a repair that results in a product (fuel tank) suitable for use. Additionally, it would have been obvious to use the adhesives disclosed by Applicant as discussed above, therefore, those adhesives would have the claimed properties as also disclosed by Applicant.

Applicant also argue that the references fail to disclose patching a fuel tank without a mechanical affixation means. As discussed above, these limitations are considered new matter. Additionally, Smith '461 and Smith '007 both disclose methods of patching without the use of additional mechanical fixation. Finally, Smith '007 discloses it is a known alternative in the art to patch fuel tanks with mechanical fixation means or with only adhesive, consequently it would have been obvious to one of ordinary skill in the art to perform the method of repair as shown by Leonard without additional mechanical fixation means as a known equivalent in the art.

Applicant argues that there is not sufficient teaching that suggests combining the adhesives in Skoultchi, Zharov and/or Pocius with the method in Leonard. As discussed above, these references disclose an improved adhesive for bonding structural components of a variety of materials. Further, Skoultchi also discloses an improved adhesive for providing a fast room temperature cure as an advantage over

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epoxy systems such as the adhesive used in Leonard. Finally, Zharov and/or Pocius further show an improved adhesive for providing improved bonding adhesives for low surface energy materials similar to those disclosed by Wood.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gladys JP Corcoran whose telephone number is (571) 272-1214. The examiner can normally be reached on M-F 8am-5:30pm (alternate Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Gladys JP Corcoran  
Primary Examiner  
Art Unit 1733

GJPC